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An Annotated Bibliography of the Dusky Cutworm

Agrotis venerabilis Walker

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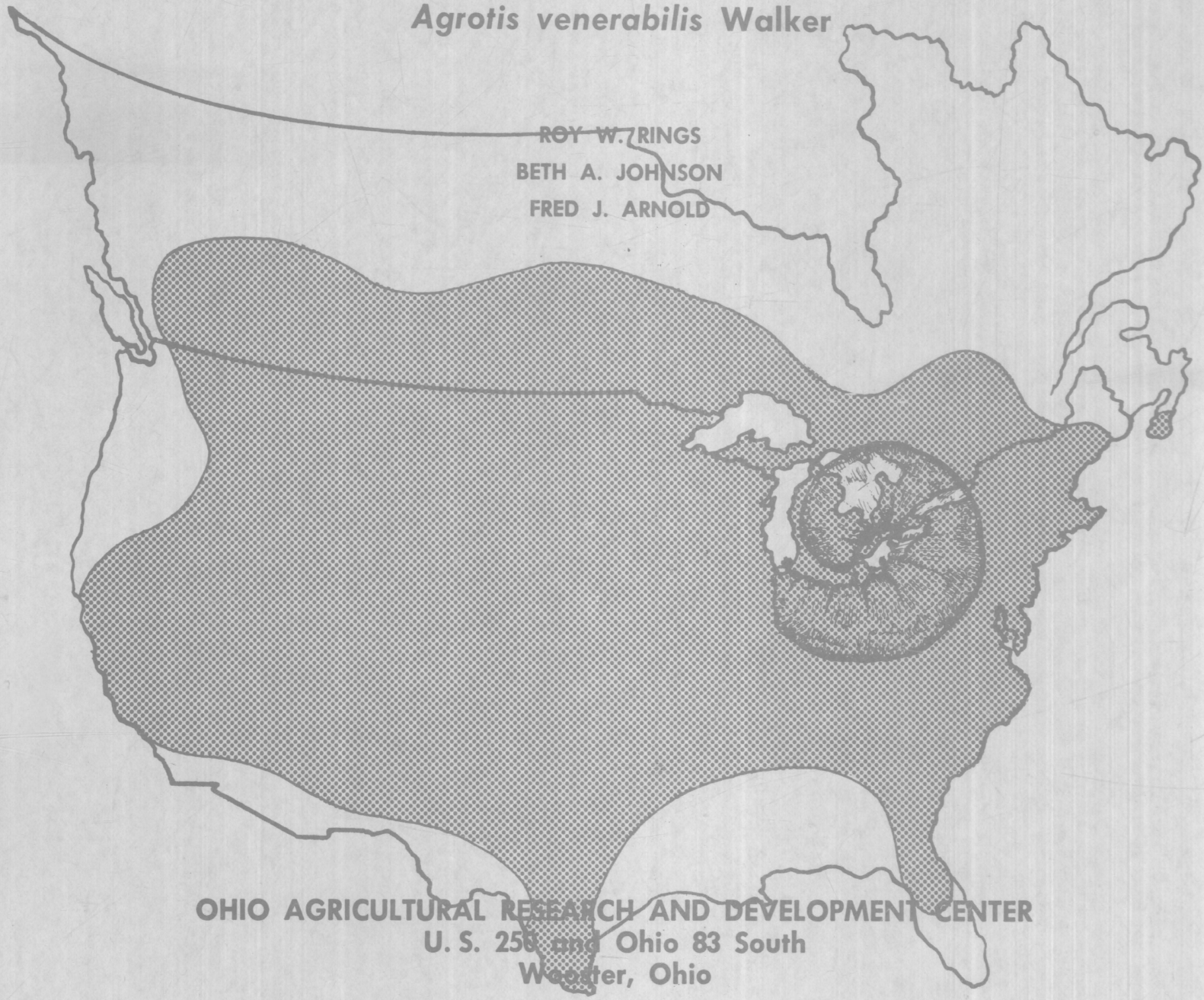

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
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AN ANNOTATED BIBLIOGRAPHY OF THE DUSKY CUTWORM, *Agrotis venerabilis* Walker[1]

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Introduction

The purpose of this circular is to consolidate the abstracted literature on the dusky cutworm, *Agrotis venerabilis* Walker. This publication brings together research and extension information on developmental biology, ecology, host range, habits, geographical and seasonal distribution, natural enemies, and control for pest management purposes. It is not intended for taxonomic studies since most faunal lists, museum lists, and other checklists cannot be abstracted for the recovery of a single species.

This cutworm was originally described by Francis Walker in 1856 as *Agrotis venerabilis* from specimens in the British Museum which were collected by Lt. Redman in Nova Scotia. The type is in the British Museum. Following Smith's 1893 publication, *Feltia venerabilis* Walker was widely used to designate the species. Grote and Robinson (1868) referred *Agrotis incallida* Walker to synonymy with *Agrotis venerabilis* Walker after examining specimens in the British Museum. The only other synonym known to the authors is *Agrotis arida* Cockerell.

The dusky cutworm ranges in North America throughout the United States and in lower Canada.

The dusky cutworm is a univoltine species and hibernates as a larva. The fully grown larvae apparently aestivate for an unusually long time and do not pupate until fall. Moth flights occur from September to November.

The egg, fully grown larva, and pupa were described by Crumb (1929), but the earlier instars are unknown. The adult was described by Forbes (1954) and the male moth was illustrated by Holland (1934).

A search of the literature in economic entomology revealed only a few records of damage and no outbreaks of this common species. Gibson (1915) reported that the dusky cutworm destroyed plants in vegetable gardens and in 1914 it was recorded as a pest of oats in Manitoba. Gauthier (1944) considered the dusky cutworm as a secondary pest of tobacco in Quebec. Walkden (1950) stated that dusky cutworms were at times abundant in cereal and forage crops in the Midwest, but no outbreaks were observed. He reported that the species was found in great numbers in pastures and that it frequently was a pest in gardens near Manhattan, Kansas. The host range of the dusky cutworm includes alfalfa, bean, burning bush, common chickweed, corn, flax, grasses, oats, pansy, strawberry, tobacco, wheat, and white sweet clover.

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Crumb (1929) and Walkden (1950) enumerate and discuss natural enemies of this cutworm. These include dipterous and hymenopterous parasites, nematodes, and plant pathogens.

The bibliographical information was obtained by a search of the abstracting journals in The Ohio State University and the Ohio Agricultural Research and Development Center Libraries for the years 1864 to 1975. Photocopies or microfilms of material unavailable at these two libraries were obtained from the National Agricultural Library or from other university libraries.

The authors have established a current awareness profile on the dusky cutworm in cooperation with the Mechanized Information Center of The Ohio State University Libraries. This computerized system of retrieval will aid in keeping this bibliographical information current. Supplementary bibliographical data on dusky cutworm will be summarized at yearly intervals and will be available on request from the Ohio Agricultural Research and Development Center.

Entries are listed alphabetically by author except in cases where the publication is anonymous or more likely to be identified with the governmental agency under which it was published. The abbreviations in the citations follow the American standard for periodical title abbreviations which was published in Biological Abstracts, 45(13):4347-4361. All references in this publication deal with *Agrotis venerabilis* Walker; however, the scientific name used in the original article is also used in the annotation so there is no question as to the species being cited. The numbers in parentheses following the annotation represent the page numbers which include information on the dusky cutworm if they are different from the citation page numbers.

Bibliography

Apgar, A. C., J. B. Smith, and W. H. Werner. 1910. The insects of New Jersey. Annu. Rep. N. J. State Mus. 1909: 455.
"*F. venerabilis* Wlk. Newark IX, 15 (Wdt); Elizabeth IX (Bz); Staten Island IX (Ds); Lakehurst IX, 27 (Gr)."

Britton, W. E. 1923. Twenty-second report of the state entomologist for 1922. Conn. Agr. Exp. Sta. Bull. 247:269-381.
In the spring of 1922, pansies growing in a cold frame in the writer's garden were injured by having both leaves and flowers eaten. The lepidopterous larvae proved to be *Feltia venerabilis* Walker. (373)

Crumb, S. E. 1929. Tobacco cutworms. U. S. Dep. Agr., Tech. Bull. 88:1-176.
A complete account of cutworms, including *Feltia venerabilis* Wlk., which attack tobacco. It includes larval and pupal anatomy and keys to species for larvae and pupae. Distribution, hosts, seasonal history, and description of stages are given for important species. Control measures include natural (pathogens and predators), chemical, and cultural. Two dipterous parasites are reported: *Anthrax alternata* Say and *Bonnettia compta* Fall. (73-75)

Crumb, S. E. 1956. The larvae of the Phalaenidae. U. S. Dep. Agr., Tech. Bull. 1135:1-356.
This publication contains keys for larval determinations and a technical description of the dusky cutworm. This is a univoltine species and the larvae have an unusually long aestivating period, beginning in early spring and extending into September. The species occurs from Nova Scotia, Ontario, Manitoba, and Alberta southward to California, Arizona, New Mexico, Texas, and Florida. The larvae have been reared on clover and chickweed. (90-91)

Dirks, C. O. 1937. Biological studies of Maine moths by light trap methods. Maine Agr. Exp. Sta. Bull. 389:33-162.
Feltia venerabilis was the most abundant species of *Feltia* at Orono, Maine, from 1931 to 1934. During the study, 94 moths were captured in 1931, 69 in 1932, 330 in 1933, and 282 in 1934, making a total of 775 for the entire period. The moths came to lights in greatest numbers during the period Sept. 7 to Sept. 21. The full period of flight extended from the last week in August to Oct. 1. Among the total captures, 56 females were secured and 52 were fully gravid. The eggs of the gravid females were found to be generally in a well-developed condition. (74-75)

Ferguson, D. C. 1954. The Lepidoptera of Nova Scotia. Proc. Nova Scotian Inst. Sci. 23:161-375.
"1425 *A. venerabilis* Wlk. Walker, 1856. Cat. Lep. Het. Brit. Mus., pt. 10, p. 328. Type locality: Nova Scotia. Lequille and Granville Ferry to Great Village, Truro, Stellarton, and the vicinity of Halifax. Often abundant. August 30-Sept. 22, at light." (225)

Ficht, G. A. 1940. Notes on Indiana Noctuidae. Proc. Indiana Acad. Sci., 49:243-253.
"*F. venerabilis* Wlk. (1397). Dusky cutworm DeKalb Co., Sept. 3; Tippecanoe Co., Sept. 9 (P.S.C.), Oct. 5 (J.J.D.)." (244)

Forbes, W. T. M. 1954. Lepidoptera of New York and neighboring states. Noctuidae. Part III. Cornell Univ. Agr. Exp. Sta. Mem. 329:1-433.

The larva and adult of *Agrotis venerabilis* are described. *Feltia arida* Cockerell is listed as a synonym. The range is given as Quebec and Nova Scotia to Texas, west to British Columbia and California. (48)

Gauthier, G. and G. Rioux. 1944. Notes preliminaries sur la biologie des especes de vers gris attaquant le tabac jaune. Quebec Soc. Protect. Plants Annu. Rep. 29:87-88.
Agrotis venerabilis Wlk. was considered a secondary pest of tobacco in the Joliette region of Quebec, Canada. (88)

Gibson, A. 1915. Cutworms and their control. Can. Dep. Agr., Entomol. Branch Bull. 10:1-31.
In Manitoba, *Feltia venerabilis* Wlk. destroyed plants in vegetable gardens and in 1914 was also found injuring oats. (31)

Grote, A. R. and C. T. Robinson. 1868. Notes on the North American Lepidoptera in the British Museum and described by Mr. Francis Walker. Trans. Amer. Entomol. Soc. 2:67-88.
"*Agrotis incallida* Walk. p. 330 = ♀ *Agrotis venerabilis* Walk." (78)

Harrendorf, K. 1959. Occurrence and relative abundance of certain noctuid moths in northwest Arkansas, Fall 1957. J. Kansas Entomol. Soc., 32(1):41-44.
Nineteen species of noctuids, including *Feltia venerabilis*, were recorded between Oct. 1 and Dec. 6, 1957, at Fayetteville, Ark. Relative abundance was determined from light trap data. This is a very superficial study.

Hart, C. A. 1903. Synopsis of insect collections for distribution to Illinois High Schools. Illinois State Laboratory of Natural History, pp. 7-64.
"118. *Feltia venerabilis* Walk. (*Agrotis*) L. unknown, I. Sept., on flowers and at electric light. Front border darker, so also kidney-spot, a longitudinal dash near base and a shade in apical margin opposite kidney-spot; transverse lines not traceable, thorax with chalky white tint each side." (32)

Hewitt, C. G. 1920. Insects affecting grain and field crops, garden and greenhouse. Rep. Dom. Entomol. & Zool. 1917 & 1918:10-13.
Feltia venerabilis was destructive in gardens in Manitoba in 1918. Wheat and flax were injured in Saskatchewan in 1917, and in 1918 oats and wheat were destroyed in that province, particularly in the district of Prince Albert. (11)

Holland, W. J. 1934. The moth book. Doubleday, Doran & Co., Inc., Garden City, N. Y. 479 pp.
Feltia venerabilis is shown in color in plate 22, figure 42. This moth is called the Venerable Dart and is said to be widely distributed throughout the United States. (186)

Kimball, C. P. 1965. The Lepidoptera of Florida. An annotated checklist. Fla. Dep. Agr., Div. Plant Ind. Gainesville. 363 pp.
"1425 *A. venerabilis* Walker. List Lep. Ins. Br. Mus. 10:328. 1856. *Venerabilis* was first recorded in the state in 1955 and is becoming increasingly more numerous. I. Escambia Co.: Nov., SMH. Quincy: Nov., Dec., DPI. Monticello: Nov., DPI. II. Gainesville: Sept., Nov., Dec. 1955, DPI, JGF. Food: white clover." (85)

King, K. M. 1929. Insects affecting field crops and gardens in Saskatchewan, 1922-1927. Sci. Agr., 9:373-390.
Feltia venerabilis Wlk. was of moderate economic importance in 1924. (380)

Knutson, H. 1944. Minnesota Phalaenidae (Noctuidae). The seasonal history and economic importance of the more common and destructive species. Minn. Agr. Exp. Sta., Tech. Bull. 165:1-128.
This bulletin includes a discussion of the economic importance and seasonal history of common noctuids in Minnesota. In this state, light trap records indicate one generation per year of the dusky cutworm. The sex ratio was 20 ♂ to 1 ♀ . The author states that few records of damage by this common species appear in the literature on economic entomology. (22)

Leonard, M. D. 1928. A list of the insects of New York. Cornell Univ. Agr. Exp. Sta. Mem. 101:1-1121.
"1397 *F. venerabilis* Wlk. Fentons; Buffalo; E. Aurora; Ithaca; McLean; Newport; Oneonta; Schenectady; Bangall; Rye; SI; LI: Woodhaven (Eng). Common southward. Sept.-early Oct." (662)

Martin S. and F. B. Cotner. 1934. Serological studies of moth proteins with special reference to their phylogenetic significance. Ann. Entomol. Soc. Amer. 27: 372-383.
Serological studies (precipitin reaction) were made of 14 genera and 20 species of moths placed in six subfamilies of the family Phalaenidae. Explanations of the reactions are presented, along with the placement of the various species according to a number of authorities. It was concluded that the precipitin reaction is useful in determining phylogenetic relationships between genera and subfamilies of the family Noctuidae. (383)

McDunnough, J. 1938. Checklist of the Lepidoptera of Canada and the United States. Part I. Macrolepidoptera. So. Calif. Acad. Sci. Mem. 1:1-272.
The dusky cutworm is listed as *Agrotis venerabilis* Wlk. Its catalogue number is 1425 and *arida* Ckll. is given as a synonym. (62)

Moore, S. 1955. An annotated list of the moths of Michigan exclusive of the Tineoidea (Lepidoptera). Univ. Mich. Misc. Pub. 88:1-87.
Michigan county records for *Feltia venerabilis* are given. (15)

Smith, J. B. 1899. Insects of New Jersey. Suppl. 27th Annu. Rep. State Board Agr., pp. 1-755.
"*F. venerabilis* Wlk. Newark, IX, 15 (Wdt), Staten Island, IX, (Ds), and undoubtedly elsewhere in the state." (409)

Smith, R. C. and E. G. Kelly. 1939. The eighth annual insect population summary of Kansas covering the year 1938. Kansas Acad. Sci. Trans., 42:303-323.
The dusky cutworm (*Agrotis venerabilis* Wlk.) was abundant in pastures, lawns, and gardens in Riley County where larvae were plentiful and some damage was done. (314)

Tietz, H. M. 1972. An index to the described life histories, early stages, and hosts of macrolepidoptera of the continental United States and Canada. Allyn Museum of Entomology, Sarasota, Fla. 1041 pp.
This publication includes a list of periodicals, journals, bulletins, and memoirs which deal with lepidopterous life histories and host plants. It also contains a list of insect common names and another list of common names of plants upon which lepidopterous insects feed. The species names are listed alphabetically with synonyms, references dealing with life history, and food plants.

United States Department of Agriculture
Cooperative Economic Insect Report[1]

The Bureau of Entomology of the U. S. Department of Agriculture, in cooperation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges, and other entomological agencies, organized an Insect Pest Survey in 1921. This survey attempted to assemble and disseminate all data on the distribution, seasonal and regional fluctuations of insect abundance, weather data as related to insect outbreaks, phenological data, and other miscellaneous information. Each year an annual digest of the important facts gathered during the past season was published in the form of Insect Pest Summaries.

From 1921 to 1950, this publication was entitled "The Insect Pest Survey Bulletin." This was not bound or indexed for the years 1942-1949. In 1951, the Bulletin was replaced by the "Cooperative Economic Insect Report," Vol. 1, No. 1, July 31, 1951. No explanation is given in this publication for the name change.

1925. U. S. Dep. Agr. Insect Pest Surv. 5:127.
Cutworms were reported to be attacking strawberries in Coventry, Bolton, and Sinsbury, Conn. At Sinsbury two species had ruined one corner of a field (1/3 to 1/2 acre in a field of 2 to 3 acres). Apparently the species were *Agrotis ypsilon* Rott. and *Feltia venerabilis* Walk., the former being more abundant on May 20 when the field was visited by Mr. Walden.

1927. U. S. Dep. Agr. Insect Pest Surv. 7:145.
Feltia venerabilis was found to be migrating to corn fields from adjacent alfalfa fields in Nebraska.

1937. U. S. Dep. Agr. Insect Pest Surv. 17:439.
Heavy flights of *Feltia venerabilis* Walk. occurred on Sept. 20 on the coast at Bar Harbor, Maine.

1938. U. S. Dep. Agr. Insect Pest Surv. 18:92, 154, 247.
Feltia venerabilis Walk. was observed destroying the leaves of plants on reclaimed sandune land at Manhattan, Kansas. This cutworm also was found in gardens. (92) The dusky cutworm was reported to be injurious in eastern Nebraska gardens. (154) *Feltia venerabilis* Walk. was reported to be destroying burning bush in Boone County, Nebraska. (247)

1939. U. S. Dep. Agr. Insect Pest Surv. 19:121.
The dusky cutworm, *Feltia venerabilis* Walk., cut off young stringbean plants at Lincoln, Nebraska.

Walkden, H. H. and D. B. Wheland. 1942. Owlet moths (Phalaenidae) taken at light traps in Kansas and Nebraska. U. S. Dep. Agr. Circ. 643:1-25.
The information in this publication was obtained through the operation of light traps at six widely separated points in the Missouri Basin, in areas typical of both the semi-arid and humid phases of the agriculture of this region. It deals with the seasonal occurrence and abundance of the owlet moths (Phalaenidae (Noctuidae)). The dusky cutworm was among the cutworms found. The data revealing the distribution, seasonal flight periods, and peaks of abundance of the various species are basic to or of value in methods of control.

[1] Issued by Plant Protection and Quarantine Programs, Animal and Plant Health Service, U. S. Department of Agriculture.

Walkden, H. H. 1943. Cutworm and armyworm populations in pasture grasses, waste lands, and forage crops. J. Econ. Entomol., 36:376-381.
Fourteen different areas were selected to study the occurrence of cutworms and armyworms. The dusky cutworm was fourth in abundance under burlap sack traps. By far the greatest percentage of dusky cutworms was found in little barley pastures. Smaller percentages of larvae were found in overgrazed pastures, little bluestem pastures, and new alfalfa, in that order. *A. venerabilis* comprised 13.3% of the 4,687 cutworms collected over a 4-year period. (378)

Walkden, H. H. 1950. Cutworms, armyworms, and related species attacking cereal and forage crops in the central great plains. U. S. Dep. Agr., Circ. 849:1-52.
The distribution, economic status, food plants and larval habits, seasonal history, and natural enemies of *Agrotis venerabilis* are discussed. Natural enemies found were *Berecyntus* sp., *Zele mellea* (Cress.), *Paranomalon* sp., *Ophion* sp., the nematode *Mermis* sp., and the pathogen *Metarrhizium anisopliae* (Metsch).

Walker, F. 1856. List of the specimens of lepidopterous insects in the collection of the British Museum. Part X. Noctuidae: 328-329.
"49. *Agrotis venerabilis.* Male. Testaceous. Head and sides of the thorax more or less whitish. Thorax occasionally with blackish bands in front. Fore wings brownish in front; discal spots with black borders; orbicular spot fusiform; reniform spot subelliptical, hardly contracted in the middle; a double black streak behind the orbicular spot. Hind wings cinereous. Length of the body 6-6 1/2 lines; of the wings 14-15 lines." This is the original description of the species.

Whelan, D. B. 1935. A key to the Nebraska cutworms and armyworms that attack corn. Nebraska Agr. Exp. Sta., Res. Bull. 81:1-27.
The description, distribution, seasonal abundance, habits and food plants of the dusky cutworm, *Feltia venerabilis* (Walker), are discussed. (17-18)

Index

This index was prepared on the computer from keywords indicated on the index card file. Information may be retrieved by author's name (left-hand column) and year (right-hand column); by host plant, by geographical locality, and by subject, *i.e.*, larval description, life history, outbreak, geographical distribution, etc. The Insect Pest Survey is abbreviated as IPS.

NEW-YORK NOCTUIDAE MOTH-DESCRIPTION* FO 00809 1954
NOCTUIDAE MOTH-DESCRIPTION* FORBES. NEW 00809 1954
NOVA-SCOTIA FAUNAL-LIST* FERGUSON. NOVA 00609 1954
OATS FLAX* HEWITT. MANITOBA WHEAT OATS 01409 1920
OATS VEGETABLE-GARDENS* GIBSON. MANITOB 01009 1915
PANSIES* BRITTON. CONNECTICUT PANSIES* 00209 1923
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SEASONAL-DISTRIBUTION* DIRKS. MAINE SEA 00509 1937
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SPECIES-COMPOSITION* WALKDEN. SACK-TRAP 03109 1943
STRAWBERRIES* IPS. CONNECTICUT STRAWBER 02609 1925
SYNONYM* MCDUNNOUGH. CHECKLIST LEPIDOPT 02109 1938
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TIETZ. HOST-RANGE* TIETZ. HOST-RANGE* 02509 1972
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WALKDEN. LIGHT-TRAPS SEASONAL-DISTRIBUTI 03309 1942
WALKDEN. NATURAL-ENEMIES HOST-RANGE* WA 03209 1950
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WALKER. BRITISH-MUSEUM MOTH-DESCRIPTION 03409 1856
WHEAT OATS FLAX* HEWITT. MANITOBA WHEAT 01409 1920
WHELAN. NEBRASKA CORN LARVAL-KEY HOST-RA 03509 1935
WHITE-CLOVER* KIMBALL. FLORIDA CHECKLIS 01609 1965